CLAIMS

1. A controlled cooking system that monitors, measures and controls the internal temperature of foods being cooked or baked, said system comprising:

a) means for automatically turning on and off a power source to control the application of a heat source applied to a cooking implement, wherein when the power source is turned-on, food placed into the cooking implement is heated and cooked,

b) a passive Radio Frequency Identification (RFID) tag having an integral temperature sensor, wherein said RFID tag is buried into the thickest part of the food that is being cooked or baked, wherein said RFID tag having means for receiving, energizing and enabling RF signals and means for automatically producing an output consisting of a backscatter signal containing encoded temperature data indicative of the internal temperature of the food being cooked or baked,

c) an interrogator having:

(1) means for producing the RF signals that energizes and enables said RFID tag,

(2) means for receiving an encoded temperature signal from said RFID tag, and

(3) means for producing an interrogated data signal that includes decoded temperature data, and

d) a microprocessor having a programmed temperature data that is indicative of the internal temperature required to optimally cook a particular food, wherein when the decoded temperature data applied from said interrogator is below the programmed temperature, said microprocessor allows said power source applied to said cooking implement to remain on, conversely when the decoded temperature data is equal to or exceeds the programmed temperature, said microprocessor shuts off the power source, thus terminating the cooking cycle.

2. The system as specified in claim 1 wherein said cooking implement is comprised of an oven or a rotisserie.

3. The system as specified in claim 2 wherein the power source is comprised of an a-c power source that is applied to said cooking implement by means of a power switch that applies the a-c voltage, via a power control relay, prior to being applied to an electrical heater that heats the food placed into the cooking implement, wherein said power control relay is enabled and disabled by a power control signal produced by said microprocessor.

4. The system as specified in claim 3 wherein said a-c power source is comprised of a utility power source.

5. The system as specified in claim 3 wherein said a-c power source is comprised of a portable power source.

6. The system as specified in claim 2 wherein said RFID tag having an integral temperature sensor is encapsulated in a non-toxic, heat resistant material that can be used once and then discarded or used several times before being discarded, said RFID tag further comprising an LC resonant circuit that functions in combination with a rectifier to convert the applied RF signal to a d-c voltage that energizes and enables said RFID tag which then produces the encoded temperature signal that is applied to said interrogator via the RF backscatter signal.

7. The system as specified in claim 6 wherein the signal coupling between said interrogator and said RFID tag is by RF near-field magnetic coupling that is produced by an interrogation antenna located at the input/output of said interrogator and a tag antenna located at the output of said RFID tag.

8. The system as specified in claim 1 further comprising:

a) a display that is enabled by said microprocessor, wherein said display circuit is designed to display the preset numeric temperature, the identification of the food being cooked or baked and the desired state of the food from rare to well done as selected by a user, and

b) an alarm that is enabled by a third output from said microprocessor, wherein said alarm produces an audible sound produced by a local or remote device.

9. A controlled cooking system that monitors, measures and controls the internal temperature of food being cooked or baked, said system comprising:

a) a power switch having:
  (1) an input connected to an a-c power source,
  (2) an a-c output,
b) an a-c to d-c power supply having:
  (1) an input that receives the a-c output from said power switch,
  (2) a d-c output,
c) a power control relay having:
  (1) a first input that receives the a-c output from said power switch,
  (2) a second input,
  (3) a first a-c output,
  (4) a second a-c output,

d) an electric heater that receives the first a-c output from said power control relay, wherein the heat produced by said electric heater cooks or bakes the food placed into the cooking implement,

e) a rotisserie motor that receives the second a-c output from said power control relay,

f) a microprocessor that is operated by firmware, said microprocessor having:

(1) a first input consisting of the d-c voltage from said a-c to d-c power supply,

(2) a second input,

(3) a third input,

(4) a first output consisting of a power control signal applied to the second input of said power control relay,

(5) a second output,

(6) a third output

g) an interrogator having:

(1) an interrogation antenna,

(2) a first input consisting of the d-c voltage applied from said a-c to d-c power supply,

(3) a first output consisting of an RF signal that is emitted from said interrogation antenna,

(4) a second output consisting of an interrogated data signal that is applied to the second input of said microprocessor,

h) a Radio Frequency Identification (RFID) tag having an internal temperature sensor, wherein said RFID tag is buried into a food that is to be cooked or baked, said RFID tag having:

(1) a tag antenna having an input that receives the RF signal from said interrogator, and

(2) an output consisting of a temperature encoded RF backscatter signal that received by said interrogator via the interrogator antenna.

i) a display that displays alpha-numeric data pertaining to the identification of the food being cooked or baked and the level of preparation from rare to well done, wherein said display is activated by the second output from said microprocessor,

j) an alarm situated locally or remotely that produces an audible sound when the food in the heating implement has been fully cooked or baked, wherein said alarm is activated by the third output from said microprocessor, and

k) a keypad connected to the third input on said microprocessor, wherein said keypad having means for selecting various foods by their name as programmed in said microprocessor.

10. The system as specified in claim 9 wherein the input a-c power source can consist of either 120 volts a-c or 220 volts a-c.

11. The system as specified in claim 10 wherein the operation of said power control relay is controlled by said microprocessor, wherein when the cooking cycle has been completed, as determined by an internal temperature programmed for each food into said microprocessor, the microprocessor commands said power control relay, to terminate the power applied to said electric heater.

12. The system as specified in claim 9 wherein said interrogator functions to activate and extract temperature data from said RFID tag.

13. The system as specified in claim 9 wherein the communication between said interrogation antenna and said tag antenna is accomplished by means of RF near-field magnetic coupling that is produced between the two said antennas.

14. The system as specified in claim 13 wherein said RFID tag operates at a frequency of 13.56 MHz or 6.78 MHz ISM band which are allocated and controlled by a government RF frequency regulating agency.

15. The system as specified in claim 9 wherein said RFID tag is encapsulated in a non-toxic, heat resistant material.

16. The system as specified in claim 9 wherein said RFID tag includes anti-collision features.

17. The system as specified in claim 9 wherein the components of said system with the exception of said interrogation antenna and said tag antenna are located outside of said heating implement.

18. A controlled cooking system that monitors, measures and control the internal temperature of food being cooked or baked, said system comprising:

a) a power switch having:
  (1) an input connected to an a-c power source,
  (2) an a-c output,
b) an a-c to d-c power supply having:
  (1) an input that receives the -ac output from said power switch,
  (2) a d-c output,
c) a power control relay having:
  (1) a first input that receives the a-c output form said power switch,
  (2) a second input,
  (3) an a-c output,
d) an electric gas solenoid valve having:
  (1) a first input that is applied the a-c output from said power control relay
  (2) a second input,
  (3) a gas input
  (3) a gas output,

e) a set of gas burners that are applied the gas output, wherein the heat produced by said gas burners are used to cook the food that is placed into the cooking implement,

f) a microprocessor having:
  (1) a firmware program that controls the operation of said microprocessor,
  (2) a first input applied from said a-c to d-c power supply
  (3) a second input,
  (4) a third input,
  (5) a first output that produces a power control signal that is applied to said power control relay,
  (6) a second output applied to said electrical gas solenoid valve,
  (7) a third output consisting of a display activation signal,

(8) a fourth output consisting of a cooking terminated/alert signal applied to said alarm, and

g) an interrogator having:

(1) an interrogation antenna,

(2) an input,

(3) a first output consisting of a RF signal that is emitted from said interrogation antenna,

(4) a second output consisting of an interrogated data signal that is applied to the second input of said microprocessor,

h) a Radio Frequency Identification (RFID) tag that is buried into a food that is to be cooked, said RFID tag comprising:

(1) a tag antenna that receives the RF signal from said interrogator,

(2) an output consisting of a temperature encoded RF backscatter signal emitted from said tag antenna and received by said interrogator,

i) a display that displays alpha-numeric data pertaining to the identification of the food being cooked or baked and the level of preparation from rare to well done, wherein said display is activated by the second output from said microprocessor,

j) an alarm situated locally or remotely that produces an audible sound when the food in the heating implement has been fully cooked or baked, wherein said alarm is activated by the third output from said microprocessor, and

k) a keypad connected to the third input on said microprocessor, wherein said keypad having means for selecting various foods by their name, as programmed in said microprocessor.

19. The system as specified in claim 18 wherein said gas source is comprised of either a utility gas source or a portable gas source.